



National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
2023_2 EXAMINATIONS_

COURSE CODE: ESM 423

COURSE TITLE: Hydrology and Water Resources.

CREDIT: 3 Units

TIME ALLOWED: 2 Hours: 30 minutes

Instruction: Attempt question number ONE (1) and any other FOUR (4) questions. Question number one (1) carries 22 marks, while the other questions carry (12) marks each.

1a) State the contributions of the following to the development of hydrology **(7marks)**

Leonardo da Vinci **(3marks)**

Bernard Palissy **(3marks)**

Marcus Vitruvius **(1mark)**.

1b) Describe vividly the processes involved in the hydrological cycle **(15marks)**

2) Explain the Features of drainage basin **(12marks)**

3a) List and explain the typology of aquifer **(4marks)**

1. Unconfined aquifer

2. Confined aquifer

3b) Discuss the early stage of hydrology development during the following eras

i) ROMAN **(4marks)**

ii) EUROPEANS **(4marks)**

4a) Discuss the importance of drainage basins **(5marks)**

4b) List the factors that influence input, output, and transport of sediment and water in a drainage basin. **(5marks)**

4c) Describe the zone of saturation in ground water **(2marks)**

5a) How is groundwater fed? **(2marks)**

5b) Discuss the problems of groundwater management from the perspective of water table depletion **(10marks)**

6a) Explain the concept of stream flow **(5marks)**

6b) What is surface water pollution? **(2marks)**

6c) What are the classifications of water pollutants? **(2marks)**

6d) Differentiate between overland flow and stream flow **(2marks)**

6e) From the environmental view point, state the two approaches to deal with water pollution **(1mark)**